

Overview of Natural Gas Tax Structures

The oil and gas industry is responsible for growth in both jobs and wealth creation in Texas. The last several decades have seen continued growth in this industry, in part through the development and production of resources from the Barnett Shale, a gas rich geological formation lying under several counties in north Texas. The continuing economic development potential of natural gas production led Texas to craft a severance tax policy that provides financial benefits to natural gas producers, specifically those who choose to undertake non-traditional forms of gas production.

Natural gas production in the state is taxed at 7.5 percent of market value; however, deductions, exemptions, and rate reductions have reduced many producers' tax liabilities to zero and reduced the overall effective rate to between 1.1 and 1.9 percent in recent years. In fiscal year 2009, 7.8 billion Mcf (thousand cubic feet) of natural gas was produced in Texas, resulting in tax collections of \$1.4 billion or 3.7 percent of total state tax collections. This was a decrease from a high of \$2.7 billion in fiscal year 2008 due to falling natural gas prices. Although seemingly a large source of revenue, this amount is a fraction of the total amount that would be collected at the full tax rate. Deductions, exemptions, and rate adjustments reduced tax payer liabilities for the natural gas production tax by \$1.2 billion in fiscal year 2009.

Facts and Findings

- High-cost natural gas well certifications are based on 30-year-old production definitions that rely on the type of gas produced and manner of production rather than the actual cost to drill. In fiscal year 2009 this resulted in the certification of a \$24,000 gas well as a high-cost operation when the median drilling cost was \$2.3 million.
- In fiscal year 2009 high-cost gas operations represented 55 percent of total gas production in the state.
- The value of high-cost natural gas tax rate reductions reached a high of \$2.17 billion in fiscal year 2008, and averaged \$1.23 billion during fiscal years 2004 through 2009. Since fiscal year 2004, the value of high-cost gas tax rate reductions has totaled \$7.4 billion.
- During fiscal year 2010, the State Auditor's Office documented multiple instances in which tax audit processes did not prevent taxpayers from claiming rate reductions in excess of statutory limits. The Comptroller of Public Accounts later reported 357 natural gas wells had exceeded maximum rate reduction caps.
- Drilling and completion costs for the 5,967 high-cost natural gas wells approved for high-cost gas tax rate reductions during fiscal year 2009 totaled \$15.9 billion, creating the potential for state revenue losses of \$7.9 billion through 2019, from just the wells drilled in 2009.

Discussion

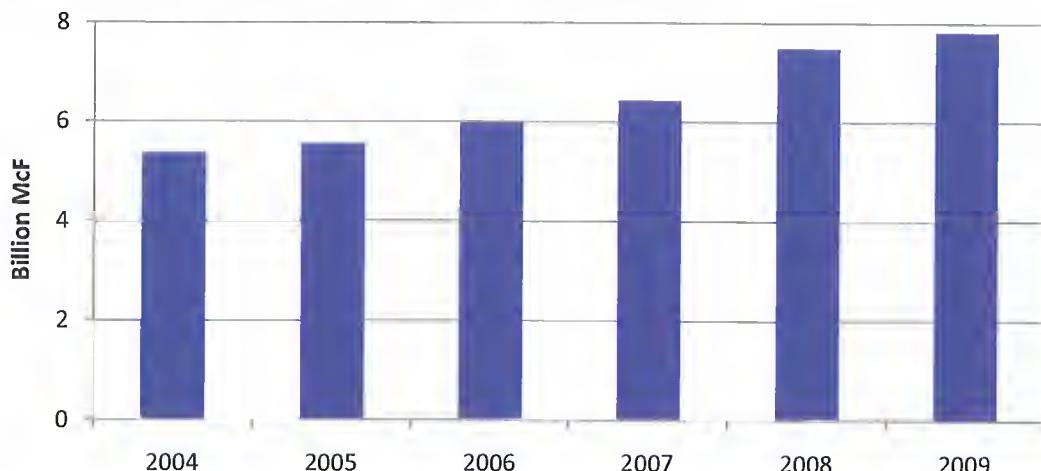
The oil and gas industry is a significant contributor to the Texas economy and state revenue. While traditional gas production positioned Texas as a leader in world energy markets, continuous experimentation with new methods of natural gas production has contributed to industrial development within the state. During the last decade, increased development of the Barnett Shale in north Texas has helped the state's gas industry grow. As shown in Figure 1,

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from fiscal year 2004 to fiscal year 2009 natural gas production in the state rose from 5.4 billion Mcf to 7.8 billion Mcf. (Mcf is a thousand cubic feet.) This level of production was spurred in part by a 19.2 percent increase in the number of active wells during that time, reaching 135,000 in 2009. During this period, average production per well increased by 6.7 percent to 52,613 Mcf per year.

In the last two decades the energy industry has sought opportunities to develop non-traditional domestic sources of energy, including oil-sand, coal-beds, and shale deposits. Traditional natural gas wells seek out gas stored in geological reservoirs where it has become trapped. Shale production bypasses storage areas and instead drills straight into the source, the natural rock from which the gas will eventually be released. One shale drilling process, fracturing, releases gas stored in solid rock by pumping a mixture of sand and water through a well to create fractures, releasing pent-up gas. Fracturing processes have achieved such success that shale gas production has grown from one percent of natural gas production in the United States to almost 10 percent during the last decade. Shale gas wells can be drilled in the conventional vertical model, or in a horizontal model that seeks to maximize initial production. Horizontal wells carry an average increased cost of 2.5 times a standard vertical well, but have historically resulted in only 31 percent more production than vertical wells over the life of the operation.

Figure 1
Natural Gas Production in Texas, Fiscal Years 2006 to 2009



Source: Comptroller of Public Accounts

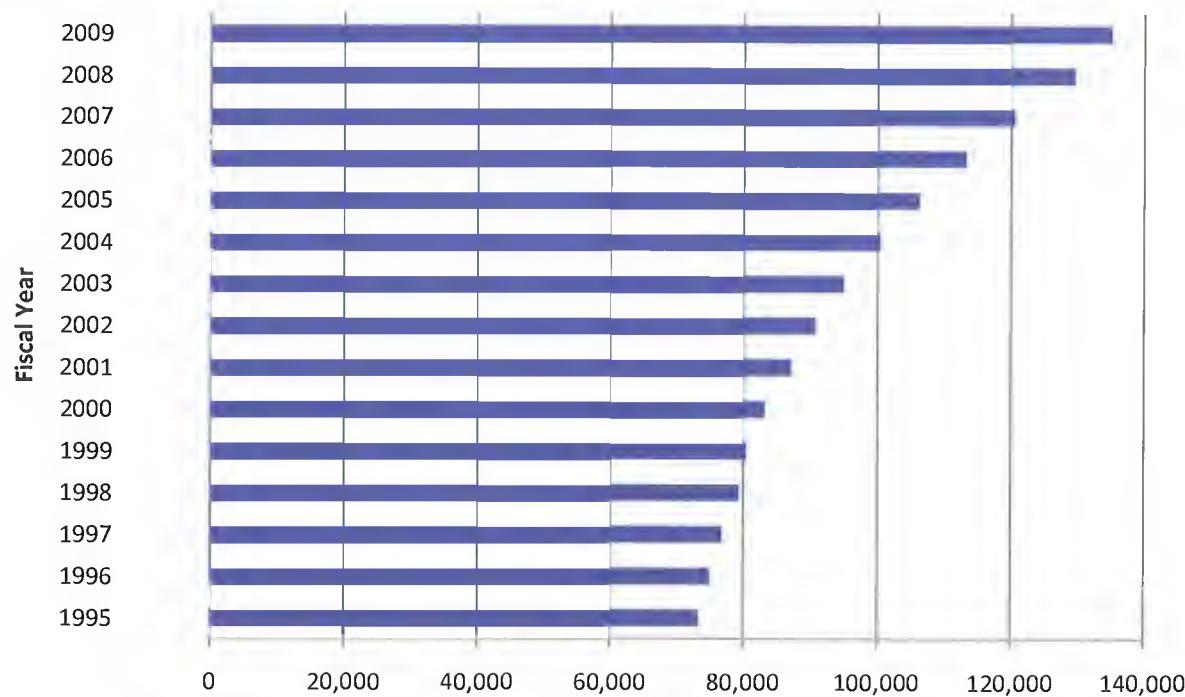
The Barnett Shale, in north Texas, was the first shale gas field to be commercially developed on a large scale and has become the standard model for shale gas recovery operations. Of the 135,000 active natural gas wells in the state during 2009, 48,113, or 35.6 percent, were shale gas recovery sites, or used similar non-traditional drilling methods. From 2006 to 2009 the number of non-traditional gas wells, including shale operations, increased by 59 percent. Production from certified high-cost wells in Texas reached 4.3 billion Mcf during fiscal year 2009, 55.1 percent of total natural gas production in the state and a 53.6 percent increase in non-traditional gas production from fiscal year 2006. The average production of non-traditional wells also improved during this time, increasing 8.9 percent over the four-year period.

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Several other large shale fields are now under development throughout the United States and Canada; the largest of the new fields is the Marcellus Shale, lying under Pennsylvania, West Virginia, and New York. The Marcellus Shale is larger than Barnett, by 90,000 square miles, and is estimated to have 10 times the gas production potential as Barnett. In response to interest from natural gas producers in developing the Marcellus Shale, Pennsylvania is considering a \$0.39 per Mcf severance tax on natural gas produced in the state. At current natural gas prices such a tax would be \$0.09 per Mcf higher than Texas' statutory tax rate, and \$0.33 per Mcf higher than Texas' effective rate for high-cost gas production during fiscal year 2009.

Geologists believe the Marcellus formation could contain sufficient gas deposits to power the United States for the next two decades. Because of these predictions, and other factors related to gas production processes such as lease timing and proximity to end consumers, many of the largest natural gas producers have begun to focus their attention to the east, although it is still unclear what impact the shift has had, or will have, on gas production in Texas. Such conditions, if persistent, could lead to slower rates of new well development in Texas in future years. Figure 2 shows the number of natural gas wells operating in Texas from fiscal year 1995 to fiscal year 2009.

Figure 2
Number of Natural Gas Wells Operating in Texas



Source: Railroad Commission

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Natural gas production in Texas is taxed as part of the state's severance tax structure, which taxes the removal of natural resources from Texas land. Severance taxes are defined as taxes on extracting, or severing, natural resources such as oil, gas, sulphur, or coal, from the earth. Natural gas production taxes are statutorily set at 7.5 percent of the market value of gas produced within the state borders. However, the state's system of authorized reductions and exemptions results in an average effective rate of less than 2 percent. For many drilling operations, the tax rate is reduced to zero percent during the first 120 months of production or until the site recovers 50 percent of its initial costs. For taxation purposes, the market value of natural gas is determined by its value at the site of the producing well, a price that can be highly volatile due to both national and international economic and political factors. The average wellhead price of gas declined from a high of \$11.32 per Mcf in July 2008 to a low of \$2.92 per Mcf in September 2009, before rebounding slightly to \$4.22 in August 2010. The amount of gas that will be subject to the tax is determined by meters placed at the well site with data collected prior to the resource leaving the lease property boundary, either by entering a pipeline or through delivery to a processing plant. The data is then reported to the state by the working interest owner of the well, known as the operator.

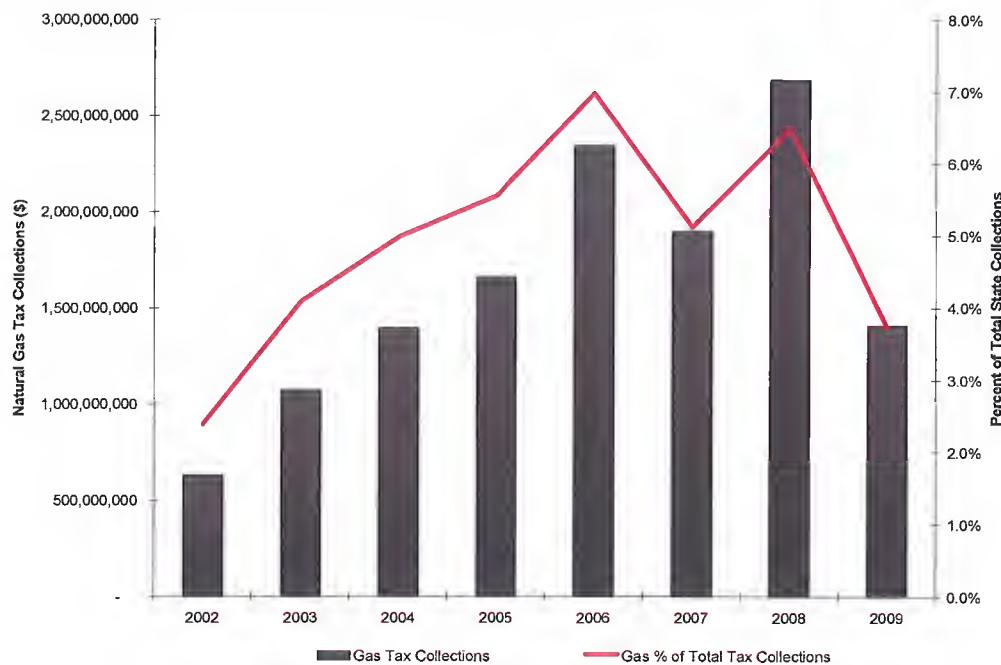
Gas production has proven to be an important revenue source for the state. In 2009, natural gas tax collections were \$1.4 billion, making up 3.7 percent of total state tax collections. Natural gas tax collections in that year declined 47.6 percent from a high collection total of \$2.7 billion in fiscal year 2008. During the last four biennia the state has collected more than \$13.0 billion in natural gas production taxes, an average of \$1.63 billion per year. Because natural gas production taxes are classified as occupations taxes, 25 percent of total collections are deposited for the benefit of public schools. Figure 3 provides natural gas tax collection totals and the related percentage of total state tax collections for fiscal years 2002 through 2009.

Economic Stabilization Fund

The health of the state's Economic Stabilization Fund (Fund) – also referred to as the "Rainy Day Fund" – bears a direct relationship to natural gas tax collections. Constitutionally, an amount of general revenue equal to 75 percent of natural gas tax collections in excess of 1987 revenue, \$599.8 million, is deposited to the Fund after the end of each fiscal year. Historically, natural gas tax revenue equivalent deposits are the largest component of the Fund, representing 64.7 percent of deposits between 1990 and 2009. The largest gas tax related deposit to the Fund, \$1.6 billion, occurred in September 2008, based on tax collections received for fiscal year 2008, dropping to \$606 million in September 2009.

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Figure 3
Natural Gas Production Tax Collections, Fiscal Years 2002 – 2009



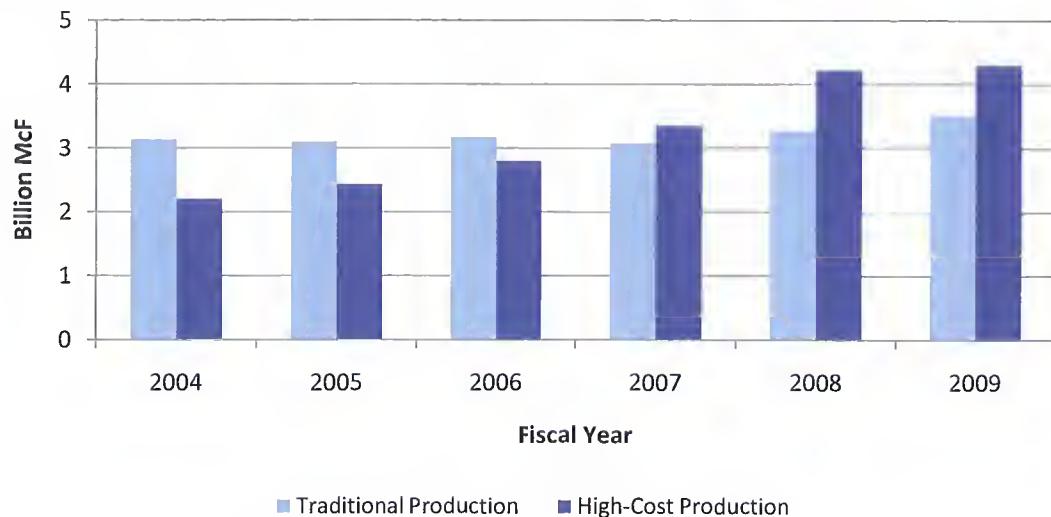
High Cost Natural Gas Tax Rate Reduction

The state provides a number of deductions, exemptions, rate reductions, and allowances to the natural gas tax that reduce total state collections. These adjustments are principally related to the method of production involved in drilling or transporting natural gas. The largest tax liability adjustment available to natural gas producers is the high-cost gas tax rate reduction program. The program applies to qualifying wells completed after August 1996 and reduces the tax rate applicable to gas produced from the well. High-cost wells must first be certified by the Texas Railroad Commission (RRC), after which time the operator can apply to the Comptroller of Public Accounts for the applicable tax rate reduction.

Texas statute cites federal law to define high-cost gas operations, specifically Title 15 USC Section 3317, as it existed on January 1, 1989 (created by the Natural Gas Policy Act of 1978). Section 3317 was repealed by Congress on July 26, 1989, with the repeal effective January 1, 1993; however, the definition remains part of the Texas Tax Code. The federal statute defines high-cost gas based on specific types of geological formations or the processes used to produce the gas, including: well completion locations greater than 15,000 feet; geo-pressured brine operations; occluded natural gas from coal seams; gas produced from Devonian shale deposits; and other conditions determined to be high-cost by the Federal Energy Regulatory Commission. As shown in Figure 4, since fiscal year 2007 high-cost natural gas drilling operations have eclipsed traditional gas production in Texas.

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Figure 4
Natural Gas Production in Texas by Type, Fiscal Years 2006 to 2009



Source: Comptroller of Public Accounts

The Texas Railroad Commission uses this definition to define specific geographic areas from which gas operations can be certified as high-cost. Each area must be anchored by at least one well that conforms to the statutory definition of high-cost gas production; area's larger than 12,500 acres must contain multiple certified wells. The effect of this definition is that drilling within the Barnett Shale qualifies as high-cost gas operations regardless of the actual drilling costs. During fiscal year 2009, drilling and completion costs for approved high-cost gas operations ranged from a high of \$14.7 million to a low of \$24,000.

Well certification allows a producer to obtain a reduction in the effective tax rate applied to natural gas produced from the specific well based on its cost relative to twice the median cost of drilling and completion for certified high-cost Texas wells during the previous year. The reduction is allowed for 120 consecutive calendar months (10 years), beginning on the first day of production, or until the total value of the reduction equals 50 percent of the actual drilling and completion costs of the certified well, whichever occurs first.

For example, consider the case of a new shale gas well site operating in the Barnett Shale, drilled during fiscal year 2010, which incurs total drilling and completion costs of \$3.0 million. The fiscal year 2009 median drilling and completion cost for certified high-cost natural gas wells in Texas was \$2,275,342. Based on the statutory rate reduction calculation, such a well, when certified as a high-cost operation by the Railroad Commission, would be eligible for a rate reduction from the statutory 7.5 percent to 2.56 percent. Figure 5 shows the rate reduction calculation for the certified high-cost gas well in this example. Production from the well would be subject to the reduced tax rate for a period of 120 consecutive months, or until the value of the reduction equals \$1.5 million, half the total drilling and completion cost of the well. However, wells drilled at costs far less than the median cost, as low as \$24,000 during fiscal year 2009, would also qualify for some level of tax rate reduction. During fiscal year 2009 the effective tax rate for all high-cost natural gas production was 1.5 percent. Figure 6 shows the distribution of effective tax rates for high-cost gas wells approved during fiscal year 2009.

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Figure 5

Tax Rate Reduction Example Calculation for High-Cost Natural Gas Well, 2010

Tax Rate - [Tax Rate (Actual Drilling Cost / (2 * Previous FY Median Drilling Cost))]

$$.075 - [.075 (\$3,000,000 / (2 * \$2,275,342))]$$

$$.075 - [.075 (\$3,000,000 / (\$4,550,684))]$$

$$.075 - [.075 (.659242)]$$

$$.075 - [.049443]$$

$$0.025557 \text{ or } 2.56\%$$

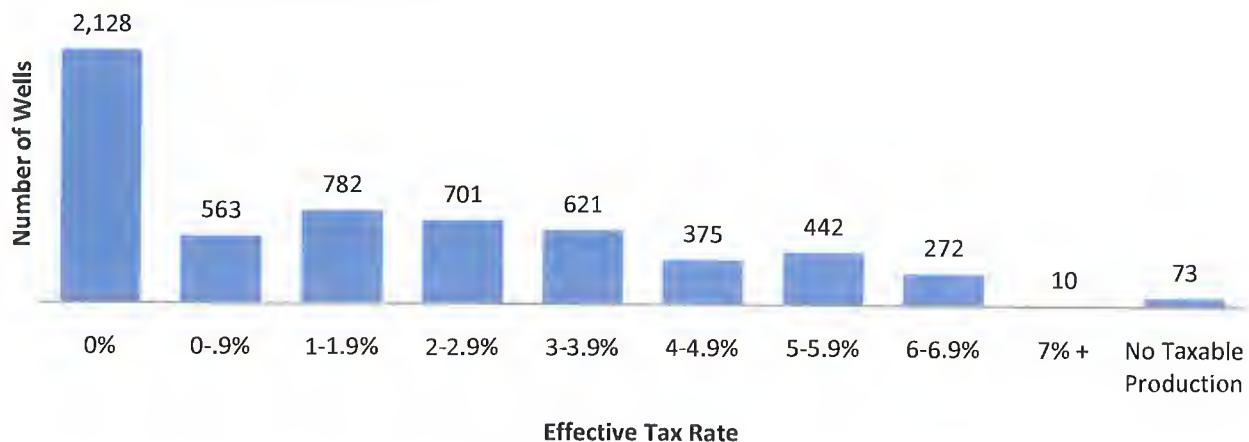
This example is based on a natural gas well drilled for \$3,000,000 for which the operator applied to the CPA for a rate reduction during fiscal year 2010.

Source: Legislative Budget Board

Drilling costs for the 5,967 high-cost natural gas wells approved for rate reductions during fiscal year 2009 totaled \$15.9 billion, creating the potential for lost state revenue of \$7.9 billion through 2019. The impact of such losses is largest during initial years because of steep production decline rates experienced by high-cost wells in later years. Actual realized losses could be less than potential estimates depending on the ability of each completed well to reach sustainable production volumes.

Figure 6

Distribution of Effective Tax Rates for High-Cost Gas Wells Approved During Fiscal Year 2009



Source: Comptroller of Public Accounts and Legislative Budget Board

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By continuing to rely on definitions of high-cost gas production which are based on late 1970's production factors and are not directly tied to changes in the cost of production all production operations in the Barnett Shale can be classified as high-cost without consideration of the actual costs incurred by producers and operators, or their cost relative to average state drilling costs. This is significant to Texas gas operations because of the development and activity of the Barnett Shale in North Texas. High-cost natural gas production in Texas increased 334 percent from 1994 to 2009. Current high-cost gas well numbers represent a 1,160 percent increase from 1994 levels of 3,818 wells, with the majority of that growth occurring after fiscal year 2003. High-cost gas expanded from 41.3 percent of total state production in fiscal year 2004 to 55.1 percent of total gas production in fiscal year 2009.

In fiscal year 2004, the revenue loss from high-cost natural gas tax rate reductions topped \$616 million. By fiscal year 2008, during a price spike in natural gas commodities, the loss to high-cost gas tax rate reductions had grown to \$2.17 billion, or 81 percent of total natural gas production taxes collected in that year. Put another way, the state did not collect 44.7 percent of total potential high-cost gas tax revenue during fiscal year 2008. Although rate reduction revenue losses decreased with commodity prices during fiscal year 2009, the value of the reductions remained above \$1.0 billion. In the same year the state paid out \$23.8 million in interest on high-cost natural gas tax refunds and credits during fiscal year 2009, 18.4 percent of total refund interest payments on taxes statewide.

Other Adjustments and Exemptions to Natural Gas Production Taxes

In addition to the high-cost natural gas tax rate reduction program, Texas provides several other forms of tax reductions, exemptions, and adjustments to natural gas producers. All natural gas producers are allowed to claim a tax deduction for marketing expenses, defined as the costs incurred by a producer to transport gas resources to market from the well site. The cost of transportation activities occurring between the point of production and the point of sale are subtracted from the producer's gross cash receipts to determine the taxable value. Natural gas marketing costs for Texas production totaled \$17.5 billion from 2004 through 2009, resulting in lost revenue to the state of \$743.5 million. Fiscal year 2009 revenue losses totaled \$139.6 million from deductions of \$3.64 billion.

Gas produced from wells previously certified as inactive are exempt from the severance tax for a period of 10 years after the well has been re-drilled. The exemption carried a value of \$71.1 million in fiscal year 2009 and is estimated to increase to \$97.3 million by fiscal year 2014. Severance tax exemptions are also provided for the orphaned well program, flaring or releasing gas, and natural gas obtained from low-producing wells. The CPA has identified the value of these exemptions as negligible. Because of declines in natural gas market prices, the low-producing wells program was activated for the first time in May 2009.

Natural Gas Tax Audit Processes

Natural gas production tax audits are conducted by the Comptroller of Public Accounts' Audit Division. The Audit Division has seven dedicated severance tax auditors, located in Houston, Texas, working on both crude oil and natural gas tax issues and an additional seven auditors working on severance tax issues part-time from locations throughout Texas and in Tulsa, Oklahoma. The majority of audit work conducted on natural gas tax collections is related to

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refund investigations, which relate primarily to marketing cost deductions. Few verifications or audits related to high-cost gas rate reductions have been conducted by Comptroller's audit staff in recent years. During fiscal year 2009, the CPA conducted 93 natural gas tax refund investigations and seven audits, averaging 104 hours per assignment. Fifty-two percent of the refund requests were denied, totaling \$64.5 million and resulting in an average recovery per investigation of \$693,050. From 2005 through 2009, refund investigations allowed the state to recover \$146.0 million in natural gas tax collections.

Even with the success of the Comptroller's conducted audit operations, the lack of attention to high-cost gas operations presents a significant potential revenue loss to the state, as there is evidence that automatic safeguards intended to prevent abuse of the system are not always effective. A March 2010 report by the State Auditor's Office found instances of taxpayers receiving reductions that exceeded statutory limits. In a review of the records for seven taxpayers in fiscal year 2009, SAO auditors calculated excess reductions of \$8.3 million. Subsequently the CPA posted a list of 357 high-cost gas leases that had exceeded the statutory limit on accumulated tax reductions related to high-cost operations of 50 percent of drilling and completion costs. While most of the wells listed had exceeded the limit by a few percentage points or less, six wells achieved recovery rates above 100 percent of costs, and two wells had accumulated reductions valued at more than 800 percent of their total applicable costs. The CPA reports it has since taken steps to address this issue – including, applying manual checks, reprogramming the reporting system with automatic limits, and assessing taxes on amounts exceeding the limits – but the ability for abuse in this complicated tax structure is obvious and unaddressed by audit operations.